

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Integral Consulting Inc.
Suite 190
285 Century Place
Louisville CO 80027

Report Date: July 20, 2016

Project: Solvay

Submittal Date: 07/01/2016

Group Number: 1678487

State of Sample Origin: NJ

Client Sample Description

V-915 Grab Water

Field Blank Grab Water

Lancaster Labs

(LL) #

8457677

8457678

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

Electronic Copy To Integral Consulting Inc.

Attn: Mark Christensen

Respectfully Submitted,

Lyssa M. Longenecker
Specialist

(717) 556-7321

Sample Description: V-915 Grab Water

LL Sample # WW 8457677

Project Name: Solvay

LL Group # 1678487

Account # 20003

Collected: 06/29/2016 15:40 by MC

Integral Consulting Inc.

Suite 190

Submitted: 07/01/2016 09:30

285 Century Place

Reported: 07/20/2016 11:03

Louisville CO 80027

V915-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Misc. Organics		EPA 537 Rev. 1.1 modified	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	760	1	2	1
10954	Perfluorononanoic acid	375-95-1	3,500	100	200	100
10954	Perfluorodecanoic acid	335-76-2	41	1	2	1
10954	Perfluoroundecanoic acid	2058-94-8	150	2	4	1
10954	Perfluorododecanoic acid	307-55-1	N.D.	3	5	1
10954	Perfluorotridecanoic acid	72629-94-8	N.D.	2	4	1
10954	Perfluorotetradecanoic acid	376-06-7	N.D.	3	5	1
10954	Perfluorohexanoic acid	307-24-4	37	1	2	1
10954	Perfluoroheptanoic acid	375-85-9	73	1	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.	4	10	1
10954	Perfluorohexanesulfonate	355-46-4	8 J	4	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.	5	10	1

Sample Comments

State of North Carolina Lab Certification No. 521

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16189004	07/15/2016 04:48	Jason W Knight	1
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16189004	07/15/2016 14:00	Jason W Knight	100
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16189004	07/08/2016 09:30	Devon M Whooley	1

*=This limit was used in the evaluation of the final result

Sample Description: Field Blank Grab Water

LL Sample # WW 8457678

Project Name: Solvay

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FB915

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Misc. Organics		EPA 537 Rev. 1.1 modified	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	2 J	1	2	1
10954	Perfluorononanoic acid	375-95-1	4	1	2	1
10954	Perfluorodecanoic acid	335-76-2	4	1	2	1
10954	Perfluoroundecanoic acid	2058-94-8	6	2	4	1
10954	Perfluorododecanoic acid	307-55-1	5	3	5	1
10954	Perfluorotridecanoic acid	72629-94-8	5	2	4	1
10954	Perfluorotetradecanoic acid	376-06-7	6	3	5	1
10954	Perfluorohexanoic acid	307-24-4	3	1	2	1
10954	Perfluoroheptanoic acid	375-85-9	3	1	2	1
10954	Perfluorobutanesulfonate	375-73-5	6 J	4	10	1
10954	Perfluorohexanesulfonate	355-46-4	4 J	4	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.	5	10	1

Sample Comments

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Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16189004	07/15/2016 05:05	Jason W Knight	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16189004	07/08/2016 09:30	Devon M Whooley	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Integral Consulting Inc.
Reported: 07/20/2016 11:03

Group Number: 1678487

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result ng/l	MDL** ng/l	LOQ ng/l
Batch number: 16189004	Sample number(s): 8457677-8457678		
Perfluorooctanoic acid	N.D.	1	2
Perfluorononanoic acid	N.D.	1	2
Perfluorodecanoic acid	N.D.	1	2
Perfluoroundecanoic acid	N.D.	2	4
Perfluorododecanoic acid	N.D.	3	5
Perfluorotridecanoic acid	N.D.	2	4
Perfluorotetradecanoic acid	N.D.	3	5
Perfluorohexanoic acid	N.D.	1	2
Perfluoroheptanoic acid	N.D.	1	2
Perfluorobutanesulfonate	N.D.	4	10
Perfluorohexanesulfonate	N.D.	4	10
Perfluoro-octanesulfonate	N.D.	5	10

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 16189004	Sample number(s): 8457677-8457678								
Perfluorooctanoic acid	200	204.35	200	191.84	102	96	70-130	6	30
Perfluorononanoic acid	200	194.97	200	184.27	97	92	70-130	6	30
Perfluorodecanoic acid	200	255.83	200	245.09	128	123	70-130	4	30
Perfluoroundecanoic acid	200	241.85	200	227.89	121	114	70-130	6	30
Perfluorododecanoic acid	200	199.56	200	214.34	100	107	70-130	7	30
Perfluorotridecanoic acid	200	221.06	200	172.35	111	86	70-130	25	30
Perfluorotetradecanoic acid	200	204.78	200	191.45	102	96	70-130	7	30
Perfluorohexanoic acid	200	229.46	200	219.22	115	110	70-130	5	30
Perfluoroheptanoic acid	200	250.39	200	211.16	125	106	70-130	17	30
Perfluorobutanesulfonate	176.8	136.31	176.8	185.86	77	105	70-130	31*	30
Perfluorohexanesulfonate	189.2	166.88	189.2	188.84	88	100	70-130	12	30
Perfluoro-octanesulfonate	191.2	239.34	191.2	196.64	125	103	70-130	20	30

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

*- Outside of specification

** This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Integral Consulting Inc.
Reported: 07/20/2016 11:03

Group Number: 1678487

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16189004	Sample number(s): 8457677-8457678 UNSPK: 8457450									
Perfluorooctanoic acid	42.98	200	280.47			119		70-130		
Perfluorononanoic acid	1.92	200	216.14			107		70-130		
Perfluorodecanoic acid	N.D.	200	283.14			142*		70-130		
Perfluoroundecanoic acid	N.D.	200	275.45			138*		70-130		
Perfluorododecanoic acid	N.D.	200	236.76			118		70-130		
Perfluorotridecanoic acid	N.D.	200	173.94			87		70-130		
Perfluorotetradecanoic acid	N.D.	200	210.53			105		70-130		
Perfluorohexanoic acid	6.14	200	300.34			147*		70-130		
Perfluoroheptanoic acid	4.93	200	256.88			126		70-130		
Perfluorobutanesulfonate	5.91	176.8	176			96		70-130		
Perfluorohexanesulfonate	N.D.	189.2	168.18			89		70-130		
Perfluoro-octanesulfonate	N.D.	191.2	257.09			134*		70-130		

*- Outside of specification

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(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



**Lancaster Laboratories
Environmental**

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 20003 Group # 1678487 Sample # 8457677-78

COC # 505217

[illegible]

Client: Solvay**Delivery and Receipt Information**

Delivery Method:	<u>Fed Ex</u>	Arrival Timestamp:	<u>07/01/2016 9:30</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>NJ</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	Yes	VOA Vial Headspace \geq 6mm:	N/A
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	20
Samples Intact:	Yes	Trip Blank Type:	N/A
Missing Samples:	No	Air Quality Samples Present:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Krista Abel (3058) at 12:36 on 07/01/2016***Samples Chilled Details**

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT121	4.6	DT	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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